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EXAMINER

DANG, KHANH NMN

| ART UNIT | PAPER NUMBER |
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2111

DATE MAILED: 05/18/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,774

Applicant(s) *S*

PORTERFIELD, A. KENT

Examiner

Khanh Dang

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 65, 66, and 69 are rejected under 35 U.S.C. 102(e) as being anticipated by Houg.

As broadly drafted, these claims do not define any structure that differs from Houg. Houg discloses a processor system comprising: a processor (502); a link hub (506, for example) connected to the processor (502) via a processor bus (unlabelled); a satellite device (400, for example); and a link bus (PCI bus 504, for example) directly connected between the link hub and the satellite device, the link bus comprising a ~~status line (status) and a first bus (data), one of the link hub and the satellite device~~ being a bus master and the other of the link hub and satellite device being a target,

wherein said master and target being able to at least initiate, disconnect, retry, abort and stall data transfers on said first bus by time multiplexing (using MUX 410) disconnecting and pacing status information on said status line.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houg.

The difference between Houg and the claimed subject matter is the use of a pull-up resistor for driving the request or command status onto the request line. However, such pull-up resistor is old and well-known as evidenced from Kim et al. and Edwards et al., both cited in previous Office Action as supportive evidences. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Houg with a pull-up resistor for driving the request or command status onto the request line of Houg, since the Examiner takes Official Notice that such pull-up resistor is old and well-known for its use to drive the request status to a request line as clearly

evidenced from at least Kim et al. and Edwards et al. both cited in previous Office Action as supportive evidences.

Claims 1-35, 37-46, 48-64 are rejected under 35 U.S.C. 103(a) as being anticipated by Blackmon et al. in view of Houg.

Blackmon discloses the claimed invention. Particularly, with regard to claim 37, 38, 42-46, 48, 50-59, and 62-64, Blackmon et al. discloses a processor system comprising: a processor (72, 74, 78); a link hub (42) connected to the processor (72, 74, 78) via a processor bus (104, 106, 108, 110, 116, 118); a satellite device (76, 80, 82); and a link bus (112, 114, 120, 122, 124, 126) directly connected between the link hub (42) and the satellite device (76, 80, 82), the link bus (42) comprising a status line and a first bus, one of said link hub (42) and said satellite device (76, 80, 83) being a bus master and the other of said link hub (42) and satellite device (76, 80, 83) being a target, wherein said master issues a data transfer request on said first bus, obtains a status of the request by observing said status line during a first predetermined window of time, determines from the obtained request status whether a data transfer corresponding to the request should be initiated, and initiates the data transfer over said first bus when the data transfer should be initiated. Specifically, in Blackmon et al., upon receiving a command or request, each bus device responds by issuing an address status response signal to a response combining logic module or Link Hub (42). The response combining logic module (42) identifies which bus device (if any) responded to the command or request with a positive acknowledge. The response combining logic

module then sends a bus device identifier to the switch via a destination route bus identifying which bus device responded with the positive acknowledge. The switch uses the device identifier returned via the response combining logic to route any subsequent data transfers associated with the issued command or request. FIG. 1 shows a plurality of bus devices 32A, 32B, 32C and 32D, hereinafter referred to collectively as 32, connected to a centralized switch 34 via a plurality of point-to-point connections 36A, 36B, 36C and 36D, hereinafter referred to collectively as 36. Bus devices 32 include, but are not limited to: processors, I/O hubs, and memory controllers. The plurality of point-to-point connections 36 collectively form a system bus for the switch based topology. A response combining logic module or Link Hub 42 is coupled to each bus device 32 via address status response signals 37A, 37B, 37C and 37D, hereinafter referred to collectively as 37. Address status response signals 37 carry a signal response generated by each of the bus devices 32 in response to an issued command or request on the system bus. See also Table 1 and description thereof. Also shown in Fig. 1, for each address bus 38 operation there are three major points where information can be passed. The address command is always the first point, where a bus master drives address bus 38. The second point where information is passed in the address status mechanism occurs when bus devices 32 provide low latency feedback (two-bit address status output (AStatOut) signal and a two-bit address status input (AStatIn) signal) in response to the issued command or request. The AStatOut/AStatIn status response signals 37 provide a positive acknowledge of an address being accepted by a bus device, a null response (stall), or an indication that the transaction

should be terminated immediately (i.e., address parity error or retry). A slave drives the AStatOut signal(s) active starting on the second cycle after it samples an address, and holds the AStatOut signal(s) active for two clock cycles (or a so-called "a first predetermined window of time." The address status AStatIn is typically sampled 2 bus clock cycles later. Alternatively, the signals may be latched and re-driven after one additional bus clock cycle. AStatOut and AStatIn are then driven anew if a new address cycle is begun, or inactivated. AStatOut and AStatIn are always driven. With regard to claim 38, in Blackmon et al., the bus identifier identifies which of the plurality of bus devices returned the positive acknowledge to the issued command; and routing a data packet associated with the issued command to the bus device returning the positive acknowledge response to the issued command (see claim 8 of Blackmon et al.). With regard to claims 39-41, 60, and 61, in Blackmon et al., when a requestor issues a request, a bus master drives the address portion with an address, an operation type identifier which defines a particular operation using the address bus, and the size of any data transferred as a result of the transaction. The address also includes an 8-bit address tag which is used to identify the operation to a particular master and command instance. With regard to claim 49, it is clear from the data transfer protocol disclosed by Blackmon et al. and also, from the discussion above that the transfer should be stopped when such transfer is on a boundary of data. With regard to claims 1-35, one using the device of Blackmon et al. would have performed the same steps set forth in claims 1-35. However, Blackmon does not disclose observing transfer status during data transfer process during a so-called "second predetermined window of time." Houg discloses a

technique for providing status information during data transfer in a predetermined period for the purpose of at least reducing transfer bottleneck. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Blackmon with the technique taught by Houg for the purpose of reducing transfer bottleneck in the system of Blackmon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 36 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al. in view of Houg, as applied to claims 1-35, 37-46, 48-64 above, and further in view of the following.

Blackmon et al. discloses the claimed invention except the use of a pull-up resistor for driving the request or command status onto the request line. However, such pull-up resistor is old and well-known as evidenced from Kim et al. and Edwards et al., both cited in previous Office Action as supportive evidences. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Blackmon et al. with a pull-up resistor for driving the request or command status onto

the request line of Blackmon et al., since the Examiner takes Official Notice that such pull-up resistor is old and well-known for its use to drive the request status to a request line as clearly evidenced from at least Kim et al. and Edwards et al. both cited in previous Office Action as supportive evidences.

Claims 65, 66, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al.

Blackmon et al. discloses the claimed invention including the use of address bus 38 having 64 bits wide for supporting addressing of multiple address spaces. For example, the multiple address spaces may include a multiple microchannel I/O space of 32 bits, a real memory space of 48 bits maximum, and a special purpose address space to pass interrupts and processor commands between bus devices 32. Address bus 38 includes an address tag used to identify the current operation to a particular Master and command instance. This tag is matched with a corresponding tag on data bus 40 at switch 34 to associate any data that corresponds to this address command. Blackmon et al. does not disclose the use of a time multiplexor, as an alternative way for either initiating, disconnecting, retry, aborting and stalling data transfer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Blackmon et al. with such a time multiplexing device, as an alternative way, to either initiate, disconnect, retry, abort and stall data transfer, since the Examiner takes Official Notice that such time multiplexing device is old and well know and using one to implement a function of logically initiating, disconnecting,

Art Unit: 2111

retry, abort and stall, for example, is clearly within level of one having ordinary skill in the art. If Applicants choose to challenge the fact that such time multiplexer is old and well-known for the purpose discussed above, supportive evidences will be provided upon request.

Claims 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmon et al., as applied to claims 1-35, 37-46, 48-64 above, and further in view of the following.

The further difference between Blackmon et al. and the claimed subject matter is the use of a pull-up resistor for driving the request or command status onto the request line. However, such pull-up resistor is old and well-known as evidenced from Kim et al. and Edwards et al., both cited in previous Office Action as supportive evidences. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Blackmon et al. with a pull-up resistor for driving the request or command status onto the request line of Blackmon et al., since the Examiner takes Official Notice that such pull-up resistor is old and well-known for its use to drive the request status to a request line as clearly evidenced from at least Kim et al. and Edwards et al. both cited in previous Office Action as supportive evidences.

Response to Arguments

~~Applicants' arguments filed 3/17/2004 have been fully considered but they are~~
not persuasive.

At the outset, Applicants are reminded that claims subject to examination will be given their broadest reasonable interpretation consistent with the specification. *In re Morris*, 127 F.3d 1048, 1054-55 (Fed. Cir. 1997). In fact, the “examiner has the duty of police claim language by giving it the broadest reasonable interpretation.” *Springs Window Fashions LP v. Novo Industries, L.P.*, 65 USPQ2d 1862, 1830, (Fed. Cir. 2003). Applicants are also reminded that claimed subject matter not the specification, is the measure of the invention. Disclosure contained in the specification cannot be read into the claims for the purpose of avoiding the prior art. *In re Sporck*, 55 CCPA 743, 386 F.2d, 155 USPQ 687 (1986).

With this in mind, the discussion will focus on how the terms and relationships thereof in the claims are met by the references. Response to any limitations that are not in the claims or any arguments that are irrelevant and/or do not relate to any specific claim language will not be warranted.

The Blackmon 103 Rejections:

With regard to claims 1, 18, 20, 30, 37, 56, and 65, Applicants argued that Blackmon fails to disclose or suggest a link bus which comprises ‘a status line and a first bus’” At the outset, it is noted that a “first bus” limitation can only be found in claims 37, 56, and 65. In any event, it is clear that the link bus of Blackmon comprises status line (112, 114, 120, 122, 124, 126). The AStatOut/AStatIn status response signals 37 provide a positive acknowledge of an address being accepted by a bus device, a null response (stall), or an indication that the transaction should be terminated immediately (i.e., address parity error or retry). A slave drives the AStatOut signal(s) active starting

Art Unit: 2111

on the second cycle after it samples an address, and holds the AStatOut signal(s) active for two clock cycles (or a so-called "a first predetermined window of time." The address status AStatIn is typically sampled 2 bus clock cycles later. Alternatively, the signals may be latched and re-driven after one additional bus clock cycle. AStatOut and AStatIn are then driven anew if a new address cycle is begun, or inactivated. AStatOut and AStatIn are always driven. The data/address line of Blackmon is readable as a "first bus." Applicants also argued that "Blackmon also fails to disclose or suggest a 'said hub device being directly connected to a first device by a link bus" (claims 1, 18, 20, and 30). Contrary to Applicants' argument, in Blackmon, the hub device (42) is directly connected to a first device (bus device) by a link bus comprising status line (112, 114, 120, 122, 124, 126). In addition, Applicants argued that Blackmon fails to disclose or suggest a "link bus directly connected between said link hub and said satellite device" (claims 37, 56, and 65), Contrary to Applicants' argument, in Blackmon, a link bus comprising status line (112, 114, 120, 122, 124, 126) is directly connected between the link hub (42) and the satellite device (bus device). With regard to the Houg reference, it is important to note that the rejection is based on a combination of reference.

The Houg 102 Rejections:

With regard to claim 65, Applicants argued that Houg does not disclose same "features" that Blackmon fails to disclose. Contrary to Applicants' argument, Houg discloses a processor system comprising: a processor (502); a link hub (506, for example) connected to the processor (502) via a processor bus (unlabelled); a satellite device (400, for example); and a link bus (PCI bus 504, for example) directly connected

between the link hub and the satellite device, the link bus comprising a status line
(status) and a first bus (data).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Khanh Dang at telephone number 703-308-0211.



Khanh Dang
Primary Examiner